

REMARKS / ARGUMENTS

Claims 1-19 are pending in the case. Claims 15-19 are withdrawn from consideration. No claims are allowed. Claims 1-14 are rejected to.

In the amendment, claims 1, 2, 7-10, 13 and 14 are cancelled without prejudice or disclaimer and claims 3, 4, 5, 11 and 12 are amended. This amendment also affirms that Group I, claims 1-14 are elected for prosecution and that Group II, claims 15-19 are withdrawn and therefore stated as cancelled by this amendment for the present application.

In the Office Action, restriction to one of the following inventions was required under 35 U.S.C. § 121:

1. Claims 1-14, drawn to a device to prevent superheating of a liquid within a microwave oven, classified in class 219, subclass 706.
2. Claims 15-19, drawn to a method of preventing superheating of a liquid within a container, classified in class 236, subclass 20R.

The inventions are distinct, each from the other because of the following reasons:

Inventions of Group I and II are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand,

or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case, the process as claimed in Group II can be practiced by another materially different apparatus or by hand, for example, a method of preventing superheating of a liquid within a container by using heating source other than microwave oven such as induction or resistance coil.

The Office Action states that because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Group II, restriction for examination purposes as indicated is proper.

During a telephone conversation with Mr. Michael Stanley on June 15, 2004 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-14. Affirmation of this election must be made by applicant in replying to this Office action. Claims 15-19 are withdrawn from further consideration by the Examiner, 37 CFR § 1.142(b), as being drawn to a non-elected invention.

In the Office Action, the drawings were objected to because there is only one figure in the application; therefore, "FIG. 1" recited in figure should be changed to "FIGURE". Corrected drawing sheets are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several vies of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR § 1.84(c)) so as not to obstruct any portion of the drawings figures. If the changes are not accepted, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

In the Office Action, claims 1-8 were objected to because of the following informalities: "the microwave" recited in claim

1, line 3 should be changed to "the microwave oven" for consistency in the claim. Appropriate correction is required.

In the Office Action, claims 1-3, 5-7 and 9-14 were rejected under 35 U.S.C. § 102(b) as being anticipated by Shirakawa (reference N: (JP 08171987A). Shirakawa discloses a microwave oven comprising a transducer (25) positionable on a surface within the microwave oven (1), wherein the surface support the container (6) for the liquid, said transducer (25) responsive to a source of energy such that said transducer (25) vibrates the surface thereby nucleating and allowing liquid to boil. It is inherent that the liquid is prevented from superheating.

In the Office Action, claims 4 and 8 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Shirakawa (JP 08171987A) in view of Tsuaki (reference A: U.S. Patent No. 4,563,313). Shirakawa discloses substantially all features of the claimed invention except said transducer operates at ultrasonic frequencies. Tsuaki discloses a transducer operates at ultrasonic frequencies (col. 2, lines 2-4). It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize in Shirakawa a transducer operates at ultrasonic frequencies as taught by Tsuaki in order to vibrate the container by applying an ultrasonic wave signal.

In the Office Action, the prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Lauf et al (reference B: U.S. Patent No. 6,268,596) discloses apparatus and method for microwave processing of liquids.

These rejections and objections are respectfully traversed in view of these amendments and remarks. Applicant therefore solicits reconsideration and allowance of the claims of the present application.

In the Office Action, the drawing was objected to because there is only one figure in the application; therefore, "FIG. 1" recited in the figure should be changed to "FIGURE". In response, the drawing has been amended to recite "FIGURE" and therefore the objection of the Office Action is resolved.

In the Office Action, claims 1-8 were objected to because the informality "the microwave" recited in claim 1, line 3 should be changed to "the microwave oven" for consistency in the claim. In response, claim 1 has been cancelled without prejudice or disclaimer; therefore, the objection of the Office Action is resolved.

In the Office Action, claims 1-3, 5-7 and 9-14 were rejected under 35 USC 102(b) as being anticipated by Shirakawa (JP 08171987A). In response, claims 1, 2, 7, 9, 10, 13 and 14 are cancelled without prejudice or disclaimer and therefore the

rejection for these claims is resolved. In regard to claim 3, the claim has been amended to incorporate the base claim 1 with the distinguishing element of the claim being that the transducer of the device is capable of being energized by a pulsed impulse with sufficient amplitude to boil the liquid. By using a pulsed waveform, more energy can be sent in a smaller time window, thereby encouraging nucleation. An impulse-like signal in the limit approaches infinite amplitude in waveform with a time window approaching zero.

In contrast, the Shirakawa reference recites the possible use of a sonicator 25 as an oscillating means that operates from the time of start up ... to vibrate a turntable (See Page 4, Paragraph 0036 of Translation) As written, the sonicator to be used in conjunction with a rotating turntable with "jogs" in a forward/reverse operation to generate a convection heating state in a liquid (Also see Page 4, Paragraph 0038). The operation of the sonicator whether alone or as suggested in conjunction with the turntable would not have the quickened effect of a pulsed impulse in breaking up a superheated state to allow boiling. As such, amended claim 3, which recites a pulsed impulse would not be anticipated by the cited reference and therefore the rejection of the Office Action is resolved.

In further response to the rejection of the Office Action, claim 4 has been amended to incorporate the base claim 1 with

the distinguishing element of the claim being that the transducer of the device operates at ultrasonic frequencies. By operating at ultrasonic frequencies, the device can quickly break up the superheated state and have smaller standing waves in the liquid prior to boiling.

In contrast, the Shirakawa reference recites the possible use of a sonicator 25 as an oscillating means that operates from the time of start up ... to vibrate a turntable (See Page 4, Paragraph 0036 of Translation) As written, the sonicator is to be used in conjunction with a rotating turntable with "jogs" in a forward/reverse operation to generate a convection heating state in a liquid (Also see Page 4, Paragraph 0038). The operation of the sonicator whether alone or as suggested in conjunction with the turntable would not have the effect of ultrasonic frequencies in breaking up a superheated state to allow boiling. As such, amended claim 4, which recites a transducer operating at ultrasonic frequencies would not be anticipated by the cited reference. Claim 5, which has been amended to depend on amended claim 4, and claim 6, which is originally dependant on claim 5, also would not be anticipated by the Shirakawa reference and therefore the rejection of the Office Action is resolved.

In further response to the rejection of the Office Action, claim 11 has been amended to incorporate the base claim 9 with

the distinguishing element of the claim being that the transducer of the device operates responsive to the operation of a timer. By operating with a timer, the transducer may be activated after a preset amount of time in the event that the container is left in the microwave oven after the microwave oven has finished heating the liquid.

In contrast, the Shirakawa reference recites the possible use of a sonicator 25 as an oscillating means that operates from the time of start up ... to vibrate a turntable (See Page 4, Paragraph 0036 of Translation) As written, the sonicator is to be used in conjunction with a rotating turntable with "jogs" in a forward/reverse operation to generate a convection heating state in a liquid (Also see Page 4, Paragraph 0038). The operation of the sonicator whether alone or as suggested in conjunction with the turntable does not teach nor suggest the use of a timer to activate the transducer after a preset amount of time in the event that the container is left in the microwave oven after the microwave oven has finished heating the liquid. As such, amended claim 11, which recites the use of a timer with the transducer would not be anticipated by the cited reference. Claim 12, which has been amended to depend on amended claim 11, also would not be anticipated by the Shirakawa reference and therefore the rejection of the Office Action is resolved.

In the Office Action, claims 4 and 8 were rejected under

35 U.S.C. § 103(a) as being unpatentable over Shirakawa (JP 08171987A) in view of Tsuaki (reference A: U.S. Patent No. 4,563,313). In response, claim 8 of the present application has been cancelled without prejudice or disclaimer and therefore the rejection of the Office Action is resolved for the claim.

In regard to claim 4, the claim has been amended to incorporate the base claim 1 with the distinguishing element of the claim being that the transducer of the device operates at ultrasonic frequencies. By operating at ultrasonic frequencies, the device can quickly break up the superheated state and have smaller standing waves in the liquid prior to boiling.

In contrast, the Shirakawa reference recites the possible use of a sonicator 25 as an oscillating means that operates from the time of start up ... to vibrate a turntable (See Page 4, Paragraph 0036 of Translation) As written, the sonicator is to be used in conjunction with a rotating turntable with "jogs" in a forward/reverse operation to generate a convection heating state in a liquid (Also see Page 4, Paragraph 0038). The operation of the sonicator whether alone or as suggested in conjunction with the turntable would not have the effect of ultrasonic frequencies in breaking up a superheated state to allow boiling.

Additionally, it would not be obvious to one skilled in the art to combine the references to produce the device of

amended claim 4 of the present invention. The Tsuaki references describes an ultrasonic transducer used to atomize or vaporize water in a humidifier. In the paper, "The Development of an Ultrasonic Humidifier for Domestic Application" (BJP Mortimer, ppg. 138-141, Center for Instrumentation Research, Cape Technikon) - hereby referenced by Information Disclosure Statement to the present application, ultrasonic humidification does not involve boiling and a liquid level of 30 millimeters above the transducer is optimal. Similarly, the ultrasonic humidifier of the Tsuaki reference encompasses the conclusions of the above-identified paper. The liquid in the humidifier does not attain a superheated state nor would nucleation sites be needed to allow the liquid in the humidifier to boil since boiling is not anticipated. As such, a superheating problem would not need to be resolved and therefore the components of the humidifier would not teach or suggest resolving a non-existent problem. Furthermore, the specialized design of the Tsuaki reference does not teach nor suggest use with arbitrary or larger shaped containers. As a result, it would not be obvious to one skilled in the art to combine the Tsuaki reference with the Shirakawa reference to produce the device as recited by amended claim 4 of the present application. As such, the rejection of the Office Action is resolved for claim 4.

In accordance with the remarks above and the amended claims, the Applicant therefore respectfully request reconsideration and allowance of the application.

The Examiner is invited to telephone Michael P. Stanley; Attorney for the Applicant, at 401-832-6393 if, in the opinion of the Examiner, such a telephone call would serve to expedite the prosecution of the subject patent application.

Respectfully submitted,
ANTHONY A. RUFFA

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By 
MICHAEL P. STANLEY
Attorney of Record
Reg. No. 47108

Amendments to the Drawings:

The attached sheet of drawings includes changes to Fig. 1. This sheet, which includes only one figure has been changed to be labeled "FIGURE" vice "FIG.1".

Attachment: Replacement Sheet

Annotated Sheet Showing Changes

1/1

FIG. E

